



Turkish Journal of Medical Sciences

Turkish Journal
of
Medical Sciences

The Status of Trace and Toxic Elements in Biological Samples (Scalp Hair) of Skin-Disease Patients and Normal Subjects

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Abstract: Background: Direct association of trace and macro-elements in relation to human disease has been observed in many research studies. In many cases, an alteration in the metabolism of these minerals has been demonstrated. Methods: In this investigation, the hair levels of the trace elements zinc (Zn), copper (Cu), chromium (Cr), iron (Fe), nickel (Ni) and the toxic elements lead (Pb) and cadmium (Cd) were determined in 110 subjects (57 skin- diseased subjects and 53 controls). Samples were analyzed using atomic absorption spectrophotometric methods. Results: Analysis of hair samples revealed significantly lower levels of zinc, iron and copper in skin-diseased patients compared with normal controls, and significantly higher levels of chromium and nickel and of toxic elements, lead and cadmium. The same pattern was observed in males and females and in both age groups studied (6-15 and 16-30 years). Conclusions: These data can guide clinicians and other professionals investigating deficiencies in essential trace metals and excessive levels of toxic metals in biological samples.

Key Words: Trace elements, toxic elements, skin disease, scalp hair, atomic absorption spectrophotometer

Turk J Med Sci 2006; **36**(4): 223-230.

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Other articles published in the same issue: [Turk J Med Sci, vol.36,iss.4.](#)